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SEQUENCE LISTING

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<120> Chimeric and Humanized Antibodies to alpha5beta1 Integrin That Modulate Angiogenesis

<130> 05882.0178.NPUS01

<140> 10/724,274
<141> 2003-11-26

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<151> 2002-11-26

<150> 60/508,149
<151> 2003-09-30

<160> 45

<170> PatentIn version 3.2

<210> 1
<211> 124
<212> PRT
<213> mus muscalus

<400> 1

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu
65 70 75 80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 2
<211> 124
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 2

Gln Val Gln Leu Val Glu Ser Gly Pro Gly Leu Val Gln Pro Gly Gly
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Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Met Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 3
<211> 124
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 3

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Asn Thr Val Tyr Leu
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 4
<211> 124
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 4

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ser Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 5
<211> 124
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 5

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu
65 70 75 80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 6
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<212> PRT
<213> artificial

<220>

<223> humanized antibody

<400> 6

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Gln Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                  10                  15

Ser Leu Arg Ile Ser Cys Ala Ile Ser Gly Phe Ser Leu Thr Asp Tyr
            20                  25                  30

Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
        35                  40                  45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
    50                  55                  60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ser Lys Ser Thr Val Tyr Leu
65                  70                  75                  80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Met Tyr Tyr Cys Ala
                85                  90                  95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
            100                 105                 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
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<210> 7
<211> 109
<212> PRT
<213> mus muscalus

<400> 7

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Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Leu Gly
1               5                  10                  15

Glu Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
            20                  25                  30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Ser Ala Pro Asn Leu Trp
        35                  40                  45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu
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65 70 75 80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
85 90 95

Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 8
<211> 109
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 8

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Met Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Asn Leu Trp
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Met Gln
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 9
<211> 109
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 9

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly

```
1               5                   10                  15

Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
            20                  25                  30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp
        35                  40                  45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Met Gln
65                  70                  75                  80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
                85                  90                  95

Pro Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
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<210> 10
<211> 109
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 10

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Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1               5                   10                  15

Asp Arg Val Thr Ile Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
            20                  25                  30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu
        35                  40                  45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln
65                  70                  75                  80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
                85                  90                  95
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Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 11
<211> 109
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 11

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 12
<211> 109
<212> PRT
<213> artificial

<220>
<223> humanized antibody

<400> 12

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
20 25 30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp
35 40 45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ser Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln
65 70 75 80

Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 13
<211> 429
<212> DNA
<213> mus muscalus

<400> 13
atggctgtcc tggggctgct tctctgcctg gtgactttcc caagctgtgt cctgtcccag 60

gtgcagctga aggagtcagg acctggcctg gtggcgccct cacagagcct gtccatcaca 120

tgcaccatct cagggttctc attaaccgac tatggtgttc actgggttcg ccagcctcca 180

ggaaagggtc tggagtggct ggtagtgatt tggagtgatg gaagctcaac ctataattca 240

gctctcaaat ccagaatgac catcaggaag gacaactcca agagccaagt ttcttaata 300

atgaacagtc tccaaactga tgactcagcc atgtactact gtgccagaca tggaacttac 360

tacggtatga ctacgacggg ggatgctttg gactactggg gtcaaggaac ctcagtcacc 420

gtctcctca 429

<210> 14
<211> 390
<212> DNA
<213> mus muscalus

<400> 14
atggattttc aggtgcagat tttcagcttc ctgctaatca gtgcctcagt cataatgtcc 60

agaggacaaa ttgttctcac ccagtctcca gcaatcatgt ctgcatctct aggggaacgg 120

gtcaccatga cctgcactgc cagttcaagt gtaagttcca ttacttgca ctggtaccag 180

cagaagccag gatccgcccc caatctctgg atttatagca catccaacct ggcttctgga 240

gtcccagctc gtttcagtgg cagtgggtct gggacctctt actctctcac aatcagcagc 300

atggaggctg aagatgctgc cacttattac tgccaccagt atcttcgttc cccaccgacg 360

ttcggtggag gcaccaagct ggaaatcaaa 390

<210> 15
<211> 429
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 15
atggctgtcc tggggctgct tctctgcctg gtgactttcc caagctgtgt cctgtcccag 60

gtgcagctga aggagtcagg acctggcctg gtggcgccct cacagagcct gtccatcaca 120

tgcaccatct cagggttctc attaaccgac tatggtgttc actgggttcg ccagcctcca 180

ggaaagggtc tggagtggct ggtagtgatt tggagtgatg gaagctcaac ctataattca 240

gctctcaaat ccagaatgac catcaggaag gacaactcca agagccaagt tttcttaata 300

atgaacagtc tccaaactga tgactcagcc atgtactact gtgccagaca tggaacttac 360

tacggtatga ctacgacggg ggatgctttg gactactggg gtcaaggaac ctcagtcacc 420

gtctcgagc 429

<210> 16
<211> 143
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 16

Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys
1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala
20 25 30

Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu
35 40 45

Thr Asp Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu
50 55 60

Glu Trp Leu Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser
65 70 75 80

Ala Leu Lys Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln
85 90 95

Val Phe Leu Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr
100 105 110

Tyr Cys Ala Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp
115 120 125

Ala Leu Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
130 135 140

<210> 17
<211> 390
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 17
atggattttc aggtgcagat tttcagcttc ctgctaatca gtgcctcagt cataatgtcc 60

agaggacaaa ttgttctcac ccagtctcca gcaatcatgt ctgcatctct aggggaacgg 120

gtcaccatga cctgcactgc cagttcaagt gtaagttcca ttacttgca ctggtaccag 180

cagaagccag gatccgcccc caatctctgg atttatagca catccaacct ggcttctgga 240

gtcccagctc gtttcagtgg cagtgggtct gggacctctt actctctcac aatcagcagc 300

atggaggctg aagatgctgc cacttattac tgccaccagt atcttcgttc cccaccgacg 360

ttcggtggag gcaccaagct cgagatcaaa 390

<210> 18
<211> 130
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 18

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile
20 25 30

Met Ser Ala Ser Leu Gly Glu Arg Val Thr Met Thr Cys Thr Ala Ser

35 40 45

Ser Ser Val Ser Ser Asn Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly
50 55 60

Ser Ala Pro Asn Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His
100 105 110

Gln Tyr Leu Arg Ser Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu
115 120 125

Ile Lys
130

<210> 19
<211> 459
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 19
tctagaccac catggctgtc ctggggctgc ttctctgcct ggtgactttc ccaagctgtg 60

tcctgtccca ggtgcagctg aaggagtcag gacctggcct ggtggcgccc tcacagagcc 120

tgtccatcac atgcaccatc tcagggttct cattaaccga ctatggtgtt cactgggttc 180

gccagcctcc aggaaagggt ctggagtggc tggtagtgat ttggagtgat ggaagctcaa 240

cctataattc agctctcaaa tccagaatga ccatcaggaa ggacaactcc aagagccaag 300

ttttcttaat aatgaacagt ctccaaactg atgactcagc catgtactac tgtgccagac 360

atggaactta ctacggaatg actacgacgg gggatgcttt ggactactgg ggtcaaggaa 420

cctcagtcac cgtctcctca ggtaagaatg gcctctaga 459

<210> 20
<211> 136
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 20

Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys
1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala
20 25 30

Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu
35 40 45

Thr Asp Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu
50 55 60

Glu Trp Leu Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser
65 70 75 80

Ala Leu Lys Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln
85 90 95

Val Phe Leu Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr
100 105 110

Tyr Cys Ala Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp
115 120 125

Ala Leu Asp Tyr Trp Gly Gln Gly
130 135

<210> 21
<211> 425
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 21
acgcgtccac catggatttt caggtgcaga ttttcagctt cctgctaatc agtgcctcag 60

tcataatgtc cagaggacaa attgttctca cccagtctcc agcaatcatg tctgcatctc 120

taggggaacg ggtcaccatg acctgcactg ccagttcaag tgtcagttcc aattacttgc 180

actggtacca gcagaagcca ggatccgccc ccaatctctg gatttatagc acatccaacc 240

tggcttctgg agtcccagct cgtttcagtg gcagtgggtc tgggacctct tactctctca 300

caatcagcag catggaggct gaagatgctg ccacttatta ctgccaccag tatcttcgtt 360

ccccaccgac gttcggtgga ggcaccaagc tggaaatcaa acgtaagtag aatccaaagt 420

ctaga 425

<210> 22
<211> 130
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 22

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile
20 25 30

Met Ser Ala Ser Leu Gly Glu Arg Val Thr Met Thr Cys Thr Ala Ser
35 40 45

Ser Ser Val Ser Ser Asn Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly
50 55 60

Ser Ala Pro Asn Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly
65 70 75 80

Val Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu
85 90 95

Thr Ile Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His
100 105 110

Gln Tyr Leu Arg Ser Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu
115 120 125

Ile Lys
130

<210> 23
<211> 1353
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 23

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acatgcacca tctcagggtt ctcattaacc gactatggtg ttcactgggt tcgccagcct 120

ccaggaaagg gtctggagtg gctggtagtg atttggagtg atggaagctc aacctataat 180

tcagctctca aatccagaat gaccatcagg aaggacaact ccaagagcca agttttctta 240

ataatgaaca gtctccaaac tgatgactca gccatgtact actgtgccag acatggaact 300

tactacggaa tgactacgac gggggatgct ttggactact ggggtcaagg aacctcagtc 360

accgtctcct cagcttccac caagggccca tccgtcttcc ccctggcgcc ctgctccagg 420

agcacctccg agagcacagc cgccctgggc tgcctggtca aggactactt ccccgaaccg 480

gtgacggtgt cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540

ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600

ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660

agagttgagt ccaaatatgg tcccccatgc ccatcatgcc cagcacctga gttcctgggg 720

ggaccatcag tcttcctgtt cccccaaaa cccaaggaca ctctcatgat ctcccggacc 780

cctgaggtca cgtgcgtggt ggtggacgtg agccaggaag accccgaggt ccagttcaac 840

tggtacgtgg atggcgtgga ggtgcataat gccaagacaa agccgcggga ggagcagttc 900

aacagcacgt accgtgtggt cagcgtcctc accgtcctgc accaggactg gctgaacggc 960

aaggagtaca agtgcaaggt ctccaacaaa ggcctcccgt cctccatcga gaaaaccatc 1020

tccaaagcca aagggcagcc ccgagagcca caggtgtaca ccctgccccc atcccaggag 1080

gagatgacca agaaccaggt cagcctgacc tgcctggtca aaggcttcta ccccagcgac 1140

atcgccgtgg agtgggagag caatgggcag ccggagaaca actacaagac cacgcctccc 1200

gtgctggact ccgacggctc cttcttcctc tacagcaggc taaccgtgga caagagcagg 1260

tggcaggagg ggaatgtctt ctcatgctcc gtgatgcatg aggctctgca caaccactac 1320

acacagaaga gcctctccct gtctctgggt aaa 1353

<210> 24
<211> 645
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 24
caaattgttc tcacccagtc tccagcaatc atgtctgcat ctctagggga acgggtcacc 60

atgacctgca ctgccagttc aagtgtaagt tccaattact tgcactggta ccagcagaag 120

ccaggatccg cccccaatct ctggatttat agcacatcca acctggcttc tggagtccca 180

gctcgtttca gtggcagtgg gtctgggacc tcttactctc tcacaatcag cagcatggag 240

gctgaagatg ctgccactta ttactgccac cagtatcttc gttccccacc gacgttcggt 300

ggaggcacca agctggaaat caaacgaact gtggctgcac catctgtctt catcttcccg 360

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 645

<210> 25
<211> 451
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 25

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
50 55 60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu
65 70 75 80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala
85 90 95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
100 105 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Ser Thr Lys
115 120 125

```
Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu
    130                 135                 140

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
145                 150                 155                 160

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
                165                 170                 175

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
            180                 185                 190

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn
        195                 200                 205

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
    210                 215                 220

Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly
225                 230                 235                 240

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
                245                 250                 255

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln
            260                 265                 270

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
        275                 280                 285

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr
    290                 295                 300

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
305                 310                 315                 320

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile
                325                 330                 335

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
            340                 345                 350

Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser
        355                 360                 365
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Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
    370                 375                 380

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
385                 390                 395                 400

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val
                405                 410                 415

Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met
            420                 425                 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
        435                 440                 445

Leu Gly Lys
    450
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<210> 26
<211> 215
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 26

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Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Leu Gly
1               5                   10                  15

Glu Arg Val Thr Met Thr Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
            20                  25                  30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Ser Ala Pro Asn Leu Trp
        35                  40                  45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu
65                  70                  75                  80

Ala Glu Asp Ala Ala Thr Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
                85                  90                  95

Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala
```

100 105 110

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
115 120 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu
130 135 140

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser
145 150 155 160

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu
165 170 175

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
180 185 190

Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys
195 200 205

Ser Phe Asn Arg Gly Glu Cys
210 215

<210> 27
<211> 696
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 27
caggtgcagc tgaaggagtc aggacctggc ctggtggcgc cctcacagag cctgtccatc 60

acatgcacca tctcagggtt ctcattaacc gactatggtg ttcactgggt tcgccagcct 120

ccaggaaagg gtctggagtg gctggtagtg atttggagtg atggaagctc aacctataat 180

tcagctctca aatccagaat gaccatcagg aaggacaact ccaagagcca agttttctta 240

ataatgaaca gtctccaaac tgatgactca gccatgtact actgtgccag acatggaact 300

tactacggaa tgactacgac gggggatgct ttggactact ggggtcaagg aacctcagtc 360

accgtctcct cagcttccac caagggccca tccgtcttcc ccctggcgcc ctgctccagg 420

agcacctccg agagcacagc cgccctgggc tgcctggtca aggactactt ccccgaaccg 480

gtgacggtgt cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540

ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600

ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660

agagttgagt ccaaatatgg tcccccatgc ccatca 696

<210> 28
<211> 232
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 28

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Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
1               5                  10                  15

Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr Asp Tyr
            20                  25                  30

Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35                  40                  45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
    50                  55                  60

Ser Arg Met Thr Ile Arg Lys Asp Asn Ser Lys Ser Gln Val Phe Leu
65                  70                  75                  80

Ile Met Asn Ser Leu Gln Thr Asp Asp Ser Ala Met Tyr Tyr Cys Ala
                85                  90                  95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
            100                 105                 110

Tyr Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser Ala Ser Thr Lys
        115                 120                 125

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu
    130                 135                 140

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
145                 150                 155                 160

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
                165                 170                 175

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
```

180 185 190

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn
195 200 205

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
210 215 220

Lys Tyr Gly Pro Pro Cys Pro Ser
225 230

<210> 29
<211> 1353
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 29
gaggtgcagc tggtggagtc aggaggaggc ctggtgcagc ccggaggaag cctgagactg 60

tcatgcgccg cctcagggtt ctcattaacc gactatggtg ttcactgggt tcgccaggcc 120

ccaggaaagg gtctggagtg gctggtggtg atttggagtg atggaagctc aacctataat 180

tcagctctca aatccagaat gaccatctca aaggacaacg ccaagaacac cgtgtactta 240

cagatgaaca gtctcagagc tgaggacacc gccgtgtact actgtgccag acatggaact 300

tactacggaa tgactacgac gggggatgct ttggactact ggggtcaagg aaccctggtc 360

accgtctcct cagcttccac caagggccca tccgtcttcc ccctggcgcc ctgctccagg 420

agcacctccg agagcacagc cgccctgggc tgcctggtca aggactactt ccccgaaccg 480

gtgacggtgt cgtggaactc aggcgccctg accagcggcg tgcacacctt cccggctgtc 540

ctacagtcct caggactcta ctccctcagc agcgtggtga ccgtgccctc cagcagcttg 600

ggcacgaaga cctacacctg caacgtagat cacaagccca gcaacaccaa ggtggacaag 660

agagttgagt ccaaatatgg tcccccatgc ccatcatgcc cagcacctga gttcctgggg 720

ggaccatcag tcttcctgtt ccccccaaaa cccaaggaca ctctcatgat ctcccggacc 780

cctgaggtca cgtgcgtggt ggtggacgtg agccaggaag accccgaggt ccagttcaac 840

tggtacgtgg atggcgtgga ggtgcataat gccaagacaa agccgcggga ggagcagttc 900

aacagcacgt accgtgtggt cagcgtcctc accgtcctgc accaggactg gctgaacggc 960

aaggagtaca agtgcaaggt ctccaacaaa ggcctcccgt cctccatcga gaaaaccatc 1020

tccaaagcca aagggcagcc ccgagagcca caggtgtaca ccctgccccc atcccaggag 1080

gagatgacca agaaccaggt cagcctgacc tgcctggtca aaggcttcta ccccagcgac 1140

atcgccgtgg agtgggagag caatgggcag ccggagaaca actacaagac cacgcctccc 1200

gtgctggact ccgacggctc cttcttcctc tacagcaggc taaccgtgga caagagcagg 1260

tggcaggagg ggaatgtctt ctcatgctcc gtgatgcatg aggctctgca caaccactac 1320

acacagaaga gcctctccct gtctctgggt aaa 1353

<210> 30
<211> 645
<212> DNA
<213> artificial

<220>
<223> chimeric antibody

<400> 30
gaaattgttc tcacccagtc tccagcaacc ctctctctct ctccggggga acgggctacc 60

ctctcctgca ctgccagttc aagtgtcagt tccaattact tgcactggta ccagcagaag 120

ccaggacagg ccccccgtct cctcatttat agcacatcca acctggcttc tggagtccca 180

gctcgtttca gtggcagtgg gtctgggacc tcttacaccc tcacaatcag cagcctcgag 240

ccagaagatt tcgccgtcta ttactgccac cagtatcttc gttccccacc gacgttcggt 300

ggaggcacca aggtcgaaat caaacgaact gtggctgcac catctgtctt catcttcccg 360

ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 420

tatcccagag aggccaaagt acagtggaag gtggataacg ccctccaatc gggtaactcc 480

caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcaccctg 540

acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt cacccatcag 600

ggcctgagct cgcccgtcac aaagagcttc aacaggggag agtgt 645

<210> 31
<211> 451
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 31

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu Thr Asp Tyr
20 25 30

```
Gly Val His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
        35                  40                  45

Val Val Ile Trp Ser Asp Gly Ser Ser Thr Tyr Asn Ser Ala Leu Lys
    50                  55                  60

Ser Arg Met Thr Ile Ser Lys Asp Asn Ala Lys Asn Thr Val Tyr Leu
65                  70                  75                  80

Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala
                85                  90                  95

Arg His Gly Thr Tyr Tyr Gly Met Thr Thr Thr Gly Asp Ala Leu Asp
            100                 105                 110

Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
        115                 120                 125

Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu
    130                 135                 140

Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
145                 150                 155                 160

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
                165                 170                 175

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
            180                 185                 190

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn
        195                 200                 205

Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
    210                 215                 220

Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly
225                 230                 235                 240

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
                245                 250                 255

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln
            260                 265                 270
```

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
275 280 285

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr
290 295 300

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
305 310 315 320

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile
325 330 335

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
340 345 350

Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser
355 360 365

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
370 375 380

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
385 390 395 400

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val
405 410 415

Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met
420 425 430

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
435 440 445

Leu Gly Lys
450

<210> 32
<211> 215
<212> PRT
<213> artificial

<220>
<223> chimeric antibody

<400> 32

Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly

```
1               5                   10                  15

Glu Arg Ala Thr Leu Ser Cys Thr Ala Ser Ser Ser Val Ser Ser Asn
            20                  25                  30

Tyr Leu His Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
        35                  40                  45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Ser Tyr Thr Leu Thr Ile Ser Ser Leu Glu
65                  70                  75                  80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys His Gln Tyr Leu Arg Ser Pro
                85                  90                  95

Pro Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala
            100                 105                 110

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
        115                 120                 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu
    130                 135                 140

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser
145                 150                 155                 160

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu
                165                 170                 175

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
            180                 185                 190

Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys
        195                 200                 205

Ser Phe Asn Arg Gly Glu Cys
    210                 215
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<210> 33
<211> 6
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 33
ctcgag 6

<210> 34
<211> 6
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 34
tctaga 6

<210> 35
<211> 6
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 35
acgcgt 6

<210> 36
<211> 35
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 36
ttttctagac caccatggct gtcctggggc tgctt 35

<210> 37
<211> 47
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 37
ttttctagag gttgtgagga ctcacctgag gagacggtga ctgaggt 47

<210> 38
<211> 31
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 38
tggaacttac tacggaatga ctacgacggg g 31

<210> 39
<211> 31
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 39
ccccgtcgta gtcattccgt agtaagttcc a 31

<210> 40
<211> 43
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 40
ttttctagag gccattctta cctgaggaga cggtgactga ggt 43

<210> 41
<211> 35
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 41
tttacgcgtc caccatggat tttcaggtgc agatt 35

<210> 42
<211> 49
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 42
ttttctagat taggaaagtg cacttacgtt tgatttccag cttggtgcc 49

<210> 43
<211> 31
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 43
tgccagttca agtgtcagtt ccaattactt g 31

<210> 44
<211> 31
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 44
caagtaattg gaactgacac ttgaactggc a 31

<210> 45
<211> 48
<212> DNA
<213> artificial

<220>
<223> oligonucleotide

<400> 45
ttttctagac tttggattct acttacgttt gatttccagc ttggtgcc 48